VOLUME CONTENTS

VOLUME 69 2005 NUMBER 1

CONTENTS

L. D. AKULENKO: A generalization of the method of averaging for the optimal control of non-linear oscillations 1
S. G. KRYZHEVICH and V. A. PLISS: Chaotic modes of oscillation of a vibro-impact system 13
M. S. YEFREMOV, A. Ye. POLYAKOV and V. V. STRYGIN: A new tracking algorithm for certain mechanical systems 27
G. V. MANUCHARYAN and Yu. V. MIKHLIN: The construction of homo- and heteroclinic orbits in non-linear systems 39
L. M. ZUBOV and D. N. SHEIDAKOV: The effect of torsion on the stability of an elastic cylinder under tension 49
V. I. YEROFEYEV and O. A. SHESHENINA: Waves in a gradient-elastic medium with surface energy 57
E. I. SVESHNIKOVA: Riemann waves in an elastic medium with small cubic anisotropy 71
A. A. PESHKOV and Yu. A. USTINOV: Ultrasonic scanning of an acoustic medium through a two-layer plate at the critical frequency 79
A. G. KOLPAKOV: The design of a beam with controlled force units 89
I. A. SOLDATENKOV: Relaxation of the contact shearing stress in problems with sliding friction 101
D. S. KONDRAT'YEV, P. V. STETSENKO and I. V. SHIRKO: Elastoplastic deformation and the limit equilibrium of granular media 111
A. G. RAMM and Ye. I. SHIFRIN: The problem of symmetry in the theory of elasticity problem concerning a planar tensile crack 127
A. M. LIN'KOV: The size of the end zone and the propagation velocity of a displacement jump 135
V. M. ALEKSANDROV and B. I. SMETANIN: A longitudinal crack in a prestressed thin elastic layer with free boundaries 141
I. Yu. TSVELODUB: The fracture of a physically non-linear inhomogeneous medium under stress–relaxation conditions in inclusions 151
Fifth International Symposium on Classical and Celestial Mechanisms 159
Advance Notice 161
Contents of next issue 162

VOLUME 69 2005 NUMBER 2

CONTENTS

Yu. N. ZHELNIN, A. A. MELIKYAN, A. Ye. UTEMOV and F. L. CHERNOUS'KO: Bringing a non-linear manoeuvring object to the optimal position in the shortest time 163
S. V. VOLKOV: Modelling of the controlled motion of a point on a plane 173
A. A. ZOBOVA and A. V. KARAPETYAN: The construction of Poincaré–Chetayev and Smale bifurcation diagrams for conservative non-holonomic systems with symmetry 183
A. A. BUROV: First integrals in the problem of the motion of a heavy rigid body about a fixed point under unilateral constraint 195
A. P. YEVDOKIMENKO: The steady motions of a gyrostat suspended on a rod in a central gravitational field 199
N. A. KUDRYASHOV: First integrals of the equations of non-linear wave dynamics 205
O. Yu. DINARIYEV: The role of cross terms in the flow law for a gas condensate mixture in a porous medium near a well 213

A. I. RYLOV: A non-stationary analogue of Chaplygin's equations in one-dimensional gas dynamics 222
G. Ye. YAKUNINA: The three-dimensional motion of optimal pyramidal bodies 234
L. P. VOVK and B. V. SOBOL': The concentration of a wave field at the interface of elastic media 244
L. P. VOVK and B. V. SOBOL': Features of the dynamic stresses in the neighbourhood of the joint of three elastic media 253
I. Yu. TSVELODUB: A three-dimensional inverse problem for a physically non-linear inhomogeneous medium 263
R. D. BANTSURI and N. N. SHAVLAKADZE: The problem of the bending of a beam lying on an elastic base 268
I. I. ARGATOV: An approximate solution of the axisymmetric contact problem for an elastic sphere..... 275
V. M. ALEKSANDROV and A. G. KHANYAN: Antiplane periodic contact problems for a layer non-uniform along its thickness 287
M. I. CHEBAKOV: Asymptotic solution of contact problems for a relatively thick elastic layer when there are friction forces in the contact area 296
Yu. Yu. MAKHOVSKAYA: The sliding of viscoelastic bodies when there is adhesion 305
O. D. PRYAKHINA and A. V. SMIRNOVA: Integral equations of dynamic problems for multilayered media containing a system of cracks 315
Contents of next issue 322

VOLUME 69 2005 NUMBER 3

CONTENTS

A. P. MARKEYEV: A constructive algorithm for the normalization of a periodic Hamiltonian 323
A. P. IVANOV: The properties of solutions of the fundamental problem of dynamics in systems with non-ideal constraints 338
C. VALLÉE, S. Ya. STEPANOV and S. CHARLES: Evaluation of the determinant of identification equations for a linear model of a mechanical vibratory system 351
A. N. BOGDANOV and V. N. DIYESPEROV: The simulation of unsteady transonic flow and the stability of a transonic boundary layer 358
V. I. ZHUK: A cnoidal wave in a plane wall jet of an incompressible viscous fluid..... 366
V. S. GALKIN and S. V. RUSAKOV: Burnett's model of the structure of a shock wave in a molecular gas..... 380
S. A. SAVKOV and A. A. YUSHKANOV: Analytical solution of the time-dependent kinetic equation for a diatomic gas..... 388
S. L. GORELOV: Application of the self-similar interpolation method to problems of rarefied gas dynamics .. 398
Ye. V. BABENKOVA, Yu. D.KAPLUNOV and Yu. A. USTINOV: Saint-Venant's principle in the case of the low-frequency oscillations of a half-strip 405
G. Ye. POPOV: Axisymmetric problems of the theory of elasticity for a truncated hollow cone 417
N. D.VAISFEL'D: Time-dependent problems of the concentration of elastic stresses near a conical defect 427
N. G. KHOMASURIDZE: Some boundary-value problems of the elastic and thermoelastic equilibrium of wedge-shaped bodies..... 438
V. S. NIKISHIN: The steady motion of a circular crack along the interface of a layer and a half-space 447
S. A. NAZAROV: A crack at the interface of anisotropic bodies. Singularities of the elastic fields and a criterion for fracture when the crack surfaces are in contact 473
A. O. VATUL'YAN and A. N. SOLOV'YEV: Reconstruction of plane cracks in an anisotropic elastic solid 484
Ninth All-Russian Congress on Theoretical and Applied Mechanics..... 493
Contents of next issue I

VOLUME 69 2005 NUMBER 4

CONTENTS

Announcement 495
Yu. K. ZOTOV: Linear stabilization of programmed motions of non-linear controlled dynamical systems 496
Yu. G. MARTYNENKO and A. M. FORMAL'SKII: The theory of the control of a monocycle 516
O. N. KIRILLOV and A. P. SEYRANIAN: The effect of small internal and external damping on the stability of distributed non-conservative systems 529
S. P. SOSNITSKII: The asymptotic stability of the equilibrium of parametrically perturbed systems 553
V. D. LUK'YANOV and G. L. NIKITIN: The reflection of normal modes from a semi-infinite system of barriers in a waveguide 564
I. Sh. AKHATOV and S. I. KONOVALOVA: Regular and chaotic dynamics of a spherical bubble 575
S. S. MEDVEDEV, V. N. UTESINOV and O. M. CHURMAYEV: Formulation and solution of the problem of determining erosion and deposition in open channels for loose soils 585
N. S. BAKHVALOV and M. E. EGLIT: Equations of higher order of accuracy describing the vibrations of thin plates 593
A. Yu. ZEMLYANOVA and V. V. SIL'VESTROV: The problem of a circular patch 611
I. T. DENISYUK: Dynamic thermoelectroelastic fields near moving non-smooth interfaces of media 618
V. Ye. VYALKOV, V. A. IVANOV and V. N. PAIMUSHIN: Modes of loss of stability and critical loads of a three-layer spherical shell under a uniform external pressure 628
Obituary: E. I. Grigolyuk (13.12.1923–29.4.2005) 646
Contents of next issue 648

VOLUME 69 2005 NUMBER 5

CONTENTS

N. L. YEFREMOV, A. N. KRAIKO and K. S. P'YANKOV: The axisymmetric nose shape of minimum wave drag for given size and volume 649
A. M. YELIZAROV and D. A. FOKIN: Exact solutions of some aerodynamic optimization problems 665
G. Ye. YAKUNINA: The optimum shapes of bodies moving in a medium taking friction into account 680
V. I. GRABOVSKII: Optimization of the shape of a porous slider as regards load capacity or static stiffness 693
I. I. VIGDOROVICH: Universal velocity and Reynolds-stress profiles in a transpired turbulent boundary layer on a plate 705
S. Yu. DOBROKHOTOV, B. TIROZZI and A. I. SHAFAREVICH: The Cauchy–Riemann conditions and localized asymptotic solutions of the linearized shallow-water equations 720
S. V. MANUILOVICH: Secondary perturbations of Benjamin waves 726
O. V. MOTYGIN: Estimates of the trapped-mode frequencies of oscillation of a liquid in the presence of submerged bodies 733
L. I. RUBINA: On the characteristics and solutions of the one-dimensional non-stationary seepage equation 743
O. V.VOINOV: Extension of the problem of viscous fluid flow in a corner to the case of flow with curved boundaries 751
A.P. BLINOV: The equilibrium shape of a liquid in a uniform force field 760

S. P. BAKANOV: The thermophoresis of solids in gases 767
V. N. PAIMUSHIN and V. I. SHALASHILIN: The relations of deformation theory in the quadratic approximation and the problems of constructing improved versions of the geometrically non-linear theory of laminated structures 773
I. D. KOCHETKOV and N. N. ROGACHEVA: Contact interaction of a piezoelectric actuator and elastic half-space 792
Contents of next issue I

VOLUME 69 2005 NUMBER 6

CONTENTS

A. P. IVANOV: The stability of systems with elastic components and slider oscillations 805
C. CATTANI and A. P. SEYRANIAN: The regions of instability of a system with a periodically varying moment of inertia 810
V. A. SAMSONOV: The dynamics of a brake shoe and "impact generated by friction" 816
G. V. GORR and Ye. K. UZBEK: A new solution of Kirchhoff's equations in the case of a linear invariant relation 825
D. N. ZEKOVICH: Linear integrals of non-holonomic systems with non-linear constraints 832
C. VALLÉE, D. FORTUNÉ and K. CHAMPION-RÉAUD: A general solution of a linear dissipative oscillatory system avoiding decomposition into eigenvectors 837
V. V. KOZLOV and S. A. POLIKARPOV: Periodic billiard trajectories in a magnetic field 844
L. D. AKULENKO: Control of the evolution of a dynamical system under high-frequency excitations 852
A. I. KOROTKII: The reconstruction of feedback using observation data 863
A. A. NEZNAKHIN and V. N. USHAKOV: Construction of the viability kernel for a non-linear controlled system with a target set 875
N. Yu. SATIMOV and M. T. TUKHTASINOV: Some game problems in distributed controlled systems 885
A. I. BLAGODATSKIKH: Weak evasion of a group of coordinated evaders 891
M. V. SHAMOLIN: Comparison of Jacobi-integrable cases of the plane and three-dimensional motion of a body in a medium in the case of jet flow 900
I. A. VOLKOV and I. A. KUSHMAR: The solution and continualization of a wave problem for a string mesh 907
J. LERBET: Non-linear dynamics of elastic curvilinear systems. A new coordinateless approach 917
F. BOYER and D. PRIMAULT: The Poincaré–Chetayev equations and flexible multibody systems 925
V. S. GALKIN and S. V. RUSAKOV: On the theory of bulk viscosity and relaxation pressure 943
Sergei Aleksandrovich Shesterikov (6 December 1930–6 July 2005) 955
Contents of next issue I